

# Norland Drinking Water System

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Waterworks # 250001910  
System Category – Small Municipal Residential

## Annual Water Report

Prepared For: The City of Kawartha Lakes

Reporting Period of January 1<sup>st</sup> – December 31<sup>st</sup> 2021

Issued: February 4 2022

Operating Authority:



This report has been prepared to satisfy the annual reporting requirements in O.Reg 170/03 Section 11 and Schedule 22

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## Report Availability

This system does not serve more than 10,000 residences. The annual reports will be available to residents free of charge at the City of Kawartha Lakes Public Works Administration Office and on [the City website](#). The City of Kawartha Lakes Public Works Administration Office is located at 322 Kent Street West in Lindsay, Ontario.

## Compliance Report Card

**Drinking Water System Number:** 250001910

**Drinking Water System Name:** Norland DWS

**Drinking Water System Owner:** City of Kawartha Lakes

**Drinking Water System Category:** Small Municipal Residential

**Reporting Period:** January 1, 2021 - December 31, 2021

	# of Events	Date	Details
<b>Health &amp; Safety</b>			
Number of Incidents	0		
<b>Drinking Water</b>			
MECP Inspections	1	February 23, 2021	2020-21 Announced-Focused Drinking Water Inspection - Final Inspection Rating of 100%
AWQI's	2	April 9, 2021	Distribution pressure loss on section of watermain.
		December 12, 2021	System pressure loss due to severe storm and backup generator failure.
Number of Non-Compliances	1	Apr 1 – 6, 2021	72-hour trend review late.
Number of Boil Water Advisories	2	April 9, 2021	Distribution pressure loss on section of watermain.
		December 12 – 16, 2021	System pressure loss due to severe storm and backup generator failure.

## System Process Description

### Raw Source

The Norland Water Treatment Plant is supplied with surface water from the Gull River.

### Treatment

The treatment system is a dual train conventional filtration package plant consisting of the following:

- In-line static mixer
- Coagulant feed system with SternPac addition upstream of static mixer
- Two stage variable speed flocculators located in flocculation tanks
- Coagulant aid feed system with polymer added to flocculation tanks
- Two upflow clarifier units equipped with tube settlers
- Two dual media rapid gravity filters
- Sodium hypochlorite feed system for primary disinfection
- Dual celled chlorine contact tanks located beneath the plant
- Two highlift pump chambers housing four highlift pumps
- Sodium hypochlorite feed system for post chlorination
- Online analyzers to monitor both free treated chlorine and filter effluent turbidity
- Wastewater treatment system that consists of two backwash pumps and a settling tank that receives backwash wastewater and clarifier sludge
- SCADA computer control system
- Standby power generator

### Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag
Polyaluminium Chloride	Flocculation	FloChem
Polymer	Flocculation	Basf
Sodium hydroxide	pH adjustment	Not required in 2021

## Summary of Non-Compliance

### Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
4-Apr-21	153838	Distribution	Leak required main to be isolated.	Leak on private property but due to size of watermain and duration of shutdown reported as a precaution and BWA issued to affected residents.	O. Reg. 170/03	BWA issued to affected residents, repaired leak, flushed, two sets of bacti samples collected from affected residents.
12-Dec-21	157297	Plant & Distribution	Loss of pressure	Severe storm caused power outage and back up generator failed.	O. Reg. 170/03	BWN issued, portable generator used until site's generator repaired. Flushed system and collected two sets of three distribution bacti samples.

### Non-Compliance

#### 1. Legislation requirement(s) system failed to meet - O. Reg.170/03

**Duration of the failure** (i.e. date(s) – April 1-6, 2021

**Corrective Action** – Notified MECP when discovered. Additional training on 72-hour review requirement

**Status** - Complete

**Non-Compliance Identified in a Ministry Inspection:**

There were no non-compliances identified in a Ministry Inspection during this period.

**Flows**

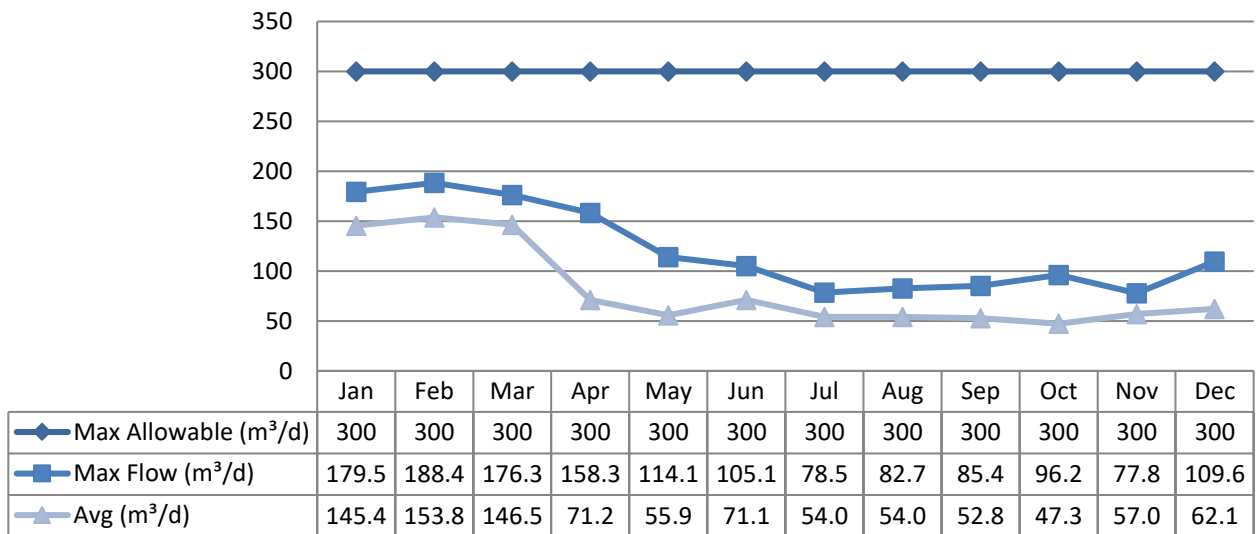
The Norland Drinking Water System is operating on average under half the rated capacity.

**Raw Water Flows**

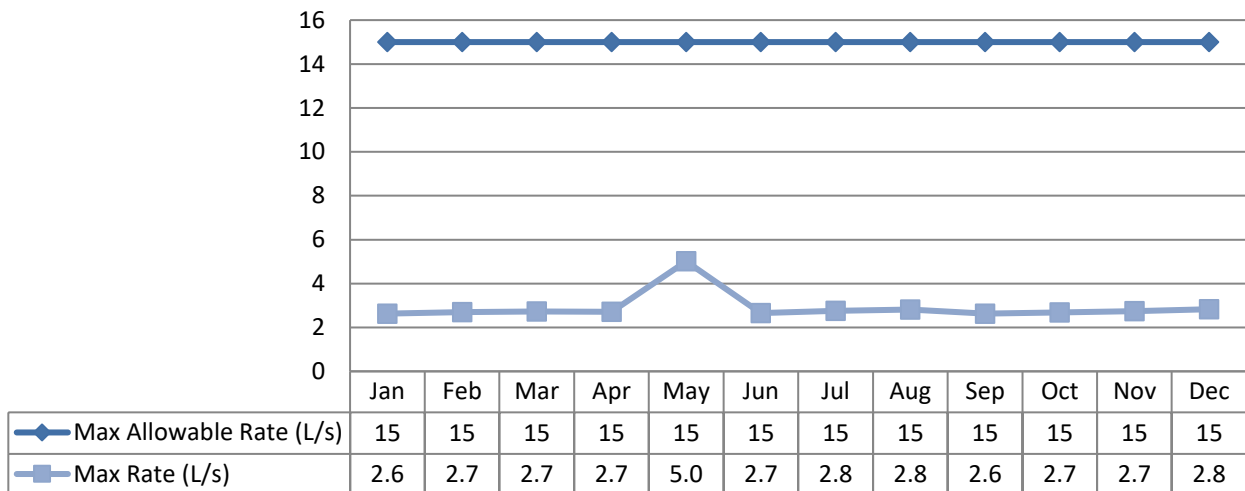
The Raw Water takings are regulated by the Permit to Take Water (PTTW). 2021 Raw Flow Data was submitted to the Ministry electronically under permit #6033-AQ5HFW. The confirmation for the data that was submitted is attached in Appendix A.

**Total Monthly Flows (m<sup>3</sup>/d)**

Max Allowable PTTW- Raw



Monthly Rated Flows (L/s)  
 Max allowable rate – PTTW- Raw

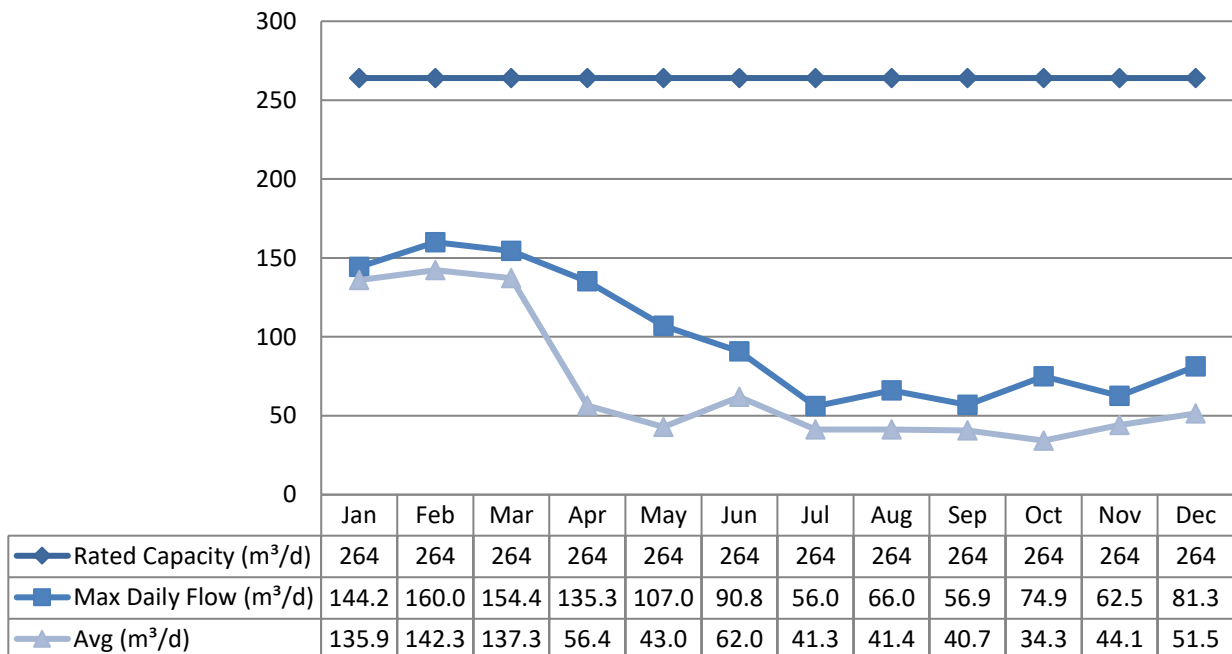


**Treated Water Flows**

The Treated Water flows are regulated under the Municipal Licence.

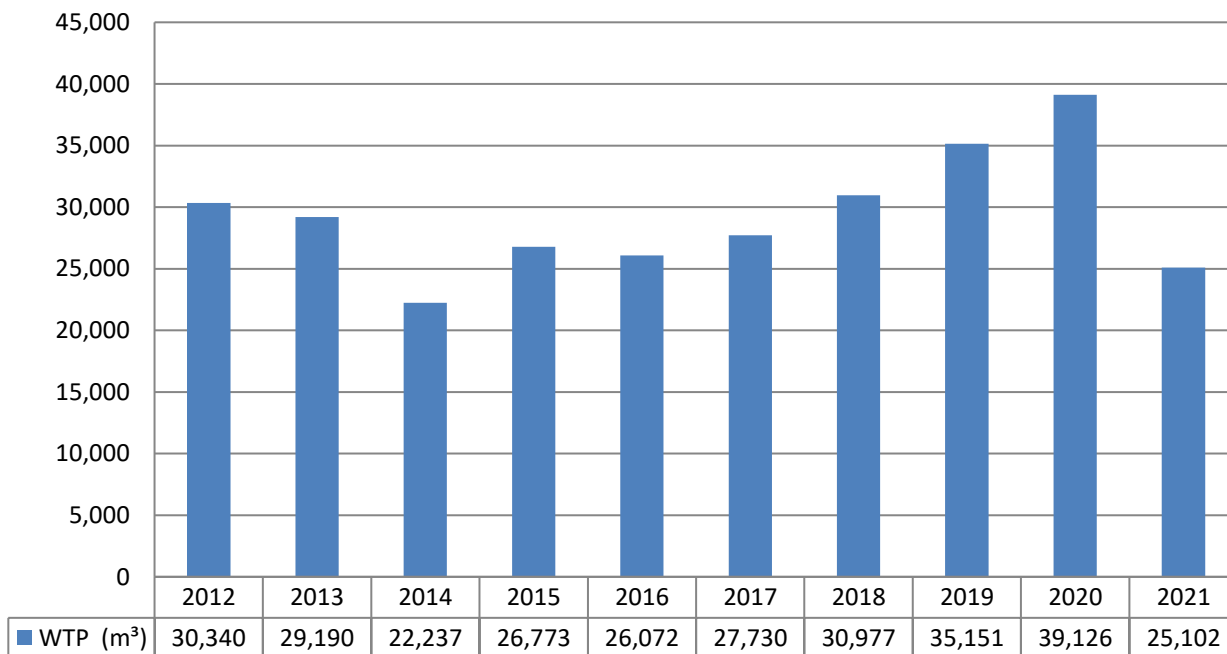
Monthly Rated Flows

Rated Capacity - MDWL



### Annual Total Flow Comparison

Total Annual m<sup>3</sup>



## Regulatory Sample Results Summary

### Microbiological Testing

	No. of Samples Collected	Range of E.Coli Results		Range of Total Coliform Results		No. of Samples Collected	Range of HPC Results	
		Min	Max	Min	Max		Min	Max
<b>Raw</b>	26	0	157	7	400	0	N/A	N/A
<b>Distribution</b>	57	0	0	0	0	57	0	1

### Operational Testing

	No. of Samples Collected	Range of Results Minimum	Range of Results Maximum
<b>Turbidity Filter 1 (NTU)</b>	8760	0.00	2.00
<b>Turbidity Filter 2 (NTU)</b>	8760	0.00	2.00
<b>Chlorine</b>	8760	0.00	3.15
<b>Fluoride (If the DWS provides fluoridation)</b>	N/A	N/A	N/A

**Note:** Record the unit of measure if it is **not** milligrams per litre.

**Note:** For continuous monitors 8760 is used as the number of samples. Spikes



recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O. Reg.170/03.

### **Inorganic Parameters**

These parameters are tested as a requirement under 170/03. Sodium, Fluoride and the metals are required to be tested every 5 years while Nitrate and Nitrite are tested quarterly. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O.Reg.169/03.
- MDL = Method Detection Limit

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Antimony: Sb (ug/L) - TW	2020/01/13	0.12	6.0	No	No
Arsenic: As (ug/L) - TW	2020/01/13	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2020/01/13	19.2	1000.0	No	No
Boron: B (ug/L) - TW	2020/01/13	20	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2020/01/13	<MDL 0.003	5.0	No	No
Chromium: Cr (ug/L) - TW	2020/01/13	0.11	50.0	No	No
Mercury: Hg (ug/L) - TW	2020/01/13	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2020/01/13	0.04	50.0	No	No
Uranium: U (ug/L) - TW	2020/01/13	0.024	20.0	No	No
<b>Additional Inorganics</b>					
Fluoride (mg/L) - TW	2020/01/13	<MDL 0.06	1.5	No	No
Nitrite (mg/L) - TW	2021/01/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2021/04/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2021/07/05	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2021/10/04	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2021/01/04	0.107	10.0	No	No
Nitrate (mg/L) - TW	2021/04/06	0.105	10.0	No	No
Nitrate (mg/L) - TW	2021/07/05	0.028	10.0	No	No
Nitrate (mg/L) - TW	2021/10/04	0.013	10.0	No	No
Sodium: Na (mg/L) - TW	2020/01/13	7.77	20*	No	No

\*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified mg/L when the sodium

concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium-restricted diets.

### **Schedule 15 Sampling**

The Schedule 15 Sampling is required under O. Reg. 170/03. This system is under reduced sampling. No plumbing samples were collected during this reporting period.

Distribution System	Number of Sampling Points	Number of Samples	Range of Results	Range of Results	MAC (ug/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	2	2	16	22	N/A	N/A
pH	2	2	7.43	8.34	N/A	N/A
Lead (ug/l)	N/A	N/A	N/A	N/A	N/A	N/A

### **Organic Parameters**

These parameters are tested annually as a requirement under O. Reg. 170/03. In the event any of the parameters exceed half of the maximum allowable concentration, the parameter is required to be sampled quarterly.

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance	Exceedance
				MAC	1/2 MAC
Alachlor (ug/L) - TW	2020/01/13	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2020/01/13	<MDL 0.01	5.0	No	No
Azinphos-methyl (ug/L) - TW	2020/01/13	<MDL 0.05	20.0	No	No
Benzene (ug/L) - TW	2020/01/13	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2020/01/13	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2020/01/13	<MDL 0.33	5.0	No	No
Carbaryl (ug/L) - TW	2020/01/13	<MDL 0.05	90.0	No	No
Carbofuran (ug/L) - TW	2020/01/13	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2020/01/13	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L) - TW	2020/01/13	<MDL 0.02	90.0	No	No
Diazinon (ug/L) - TW	2020/01/13	<MDL 0.02	20.0	No	No
Dicamba (ug/L) - TW	2020/01/13	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2020/01/13	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2020/01/13	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2020/01/13	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2020/01/13	<MDL 0.33	14.0	No	No

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance	Exceedance
				MAC	1/2 MAC
Dichloromethane (Methylene Chloride) (ug/L) - TW	2020/01/13	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2020/01/13	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2020/01/13	<MDL 0.19	100.0	No	No
Diclofop-methyl (ug/L) - TW	2020/01/13	<MDL 0.4	9.0	No	No
Dimethoate (ug/L) - TW	2020/01/13	<MDL 0.06	20.0	No	No
Diquat (ug/L) - TW	2020/01/13	<MDL 1.0	70.0	No	No
Diuron (ug/L) - TW	2020/01/13	<MDL 0.03	150.0	No	No
Glyphosate (ug/L) - TW	2020/01/13	<MDL 1.0	280.0	No	No
Malathion (ug/L) - TW	2020/01/13	<MDL 0.02	190.0	No	No
Metolachlor (ug/L) - TW	2020/01/13	<MDL 0.01	50.0	No	No
Metribuzin (ug/L) - TW	2020/01/13	<MDL 0.02	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2020/01/13	<MDL 0.3	80.0	No	No
Paraquat (ug/L) - TW	2020/01/13	<MDL 1.0	10.0	No	No
PCB (ug/L) - TW	2020/01/13	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L) - TW	2020/01/13	<MDL 0.15	60.0	No	No
Phorate (ug/L) - TW	2020/01/13	<MDL 0.01	2.0	No	No
Picloram (ug/L) - TW	2020/01/13	<MDL 1.0	190.0	No	No
Prometryne (ug/L) - TW	2020/01/13	<MDL 0.03	1.0	No	No
Simazine (ug/L) - TW	2020/01/13	<MDL 0.01	10.0	No	No
Terbufos (ug/L) - TW	2020/01/13	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2020/01/13	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2020/01/13	<MDL 0.2	100.0	No	No
Triallate (ug/L) - TW	2020/01/13	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L) - TW	2020/01/13	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2020/01/13	<MDL 0.25	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2020/01/13	<MDL 0.12	100.0	No	No
Trifluralin (ug/L) - TW	2020/01/13	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L) - TW	2020/01/13	<MDL 0.17	1.0	No	No
<b>Distribution Water</b>					
Trihalomethane: Total (ug/L) Annual Average - DW	2021	51.8	100	No	Yes
HAA Total (ug/L) Annual Average - DW	2020	57.6	80	No	Yes

MAC = Maximum Allowable Concentration as per O. Reg. 169/03  
 MDL = Method Detection Limit

**Additional Legislated Samples**

<b>Municipal Drinking Water Licence</b>	<b>Date Collected</b>	<b>Suspended Solids (mg/L)</b>	<b>Free Chlorine Residual (mg/L)</b>
Settling Tank Discharge Point	January	9	0.01
	February	7	0.01
	March	34	0.02
	April	2	0.01
	May	10	0.02
	June	24	0.01
	July	17	0.01
	August	36	0.01
	September	11	0.01
	October	39	0.01
	November	21	0.01
	December	6	0.02
	Annual Average	18	

Note: The Suspended Solids 12 month running average limit is 25 mg/L.



**Major Maintenance Summary incurred to install, repair or replace required equipment**

**WO #      Description**

- 2405809      Repair generator
- 2134291      Repair Pressure Release Valve Leak
- 2091980      Installed VFDs on Remaining Two Highlift Pumps
- 1536451      Replaced Lowlift Pumps
- 2312516      Installed New BTP SCADA Panel

# Appendix A

## WTRS Data Submission Confirmation



Ministry of the Environment,  
Conservation and Parks

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Location: [WTRS](#) / [WT DATA](#) / [Input WT Record](#)

WTRS-WT-008

**Water Taking Data submitted successfully.**

**Confirmation:**

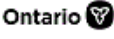
Thank you for submitting your water taking data online.

Permit Number: 6033-AQ5HFW  
Permit Holder: THE CORPORATION OF THE CITY OF KAWARTHA LAKES.  
Received on: Jan 28, 2022 1:44 PM

This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above.

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